U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
STS Drum Site
Removal Site Evaluation POLREP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4

Subject: POLREP
Removal Site Evaluation
American Zinc Ponds Release
484 Hicks Grove Road, Mooresboro, Rutherford County, North Carolina, 28114

Latitude: 35.19105
Longitude: -81.84897

To: James W. Webster, Ph.D., ERRPPB
Thru: Matt Taylor, Removal Operation Section
From: Kenneth B. Rhame, On-Scene Coordinator
Date: October 6, 2021

Reporting Period: July 29,2021 to October 6, 2021

1. Introduction

Site Number: C489 OU1
Response Authority: CERCLA
Response Type: Time-Critical
Response Lead: EPA
Incident Category: Removal Assessment
NPL Status: Non NPL

1.1 Site Description

The Site is approximately 196 acres. The plant sits along the right descending bank of the Broad River. The area is predominantly used for mixed residential and agricultural purposes with a fire department and a church across the street. The AZP facility recycles zinc through a process of zinc metal recovery via solvent extraction and electrowinning (metal recovery from solution by means of electrolytic chemical reaction). Most of the zinc containing material received by AZP comes from waste generated by steel mills (electric arc furnace (EAF) dust). The EAF dust (20% zinc) is then transported from the steel mill to an American Zinc Recycling (AZR) facility where it undergoes a purification process prior to being transported to AZP (60% zinc) for zinc extraction. The 60% zinc powder received by AZP is called Waelz Oxide (WOX). The zinc extraction process at AZP involves putting the WOX into solution (Sulfuric Acid) and using a solvent (specialty grade kerosine) as a carrier. Prior to the National Response Center notification, AZP utilized four storage ponds located on the west side of the facility. The four AZP west ponds are described below.

AZP West Ponds

1. Depleted solution pond receives depleted solution from the solvent extraction circuit by gravity flow. The depleted solution is then pumped to the gypsum removal circuit. The pond is therefore integrated in the solvent extraction circuit. Depleted solution comprises primarily a low concentration of sulfuric acid and zinc, other metals, such as cadmium, lead, and iron in lower concentrations.
2. Raffinate pond receives raffinate solution from the solvent extraction circuit by gravity flow. The raffinate solution is then pumped back to the leach circuit. Raffinate comprises a sulfuric acid solution, containing zinc and other metals.
3. Maintenance pond stores the contents of various tanks and vessels in the plant during maintenance periods and also receives solution or contact storm water from containments.
4. Stormwater pond stores storm water from within the plant confines.

All four ponds are double lined.

On July 25, 2021, AZP initiated the removal and replacement of the liners within the raffinate pond. After removing the liners, AZP discovered that the underlying soils had a pH of less than 2 and a presence of metals that were indicative of a release from the raffinate pond, demonstrating a compromised containment/liner system, prompting the notification to the NRC on July 29, 2021, reporting the release of sulfuric acid. This discovery triggered the investigation of the depleted solution pond and the maintenance pond. All three of these ponds (depleted solution, raffinate and maintenance) had soil contamination underneath the liners indicating a breach in the liner systems.

1.2 Site Location

The Site is located at 484 Hicks Grove Road, Mooresboro, Rutherford County, North Carolina. The geographical coordinates are latitude 35.19105, by longitude -81.84897.

2. Removal Site Evaluation

On September 17, 2021, the North Carolina Department of Environmental Quality (NCDEQ) Hazardous Waste Program referred the Site to the U.S. Environmental Protection Agency Region 4 to conduct a Removal Site Evaluation (RSE). After the discovery of contamination in soils beneath the liner of the raffinate pond on July 25, 2021, eight soil samples and one liquid sample were collected from two borings under the liner of the raffinate pond and the depleted solution pond on July 28, 2021; the soil sample analytical showed pH was as low as 1.6, zinc concentrations were as high as 5,300 mg/kg; lead concentrations were as high as 130 mg/kg and cadmium concentrations were as high as 80 mg/kg. AZP collected a liquid sample at approximately 15 inches below surface, the liquid sample data showed lead concentrations at 20 mg/l (RCRA TCLP of 5 mg/l), cadmium at 240 mg/l (RCRA TCLP of 1 mg/l), selenium at 1.2 mg/l (RCRA TCLP of 1 mg/l), and a pH of 1.1 standard units (RCRA TCLP at <2 standard units). At this pH, these concentrations are suspected to be characteristic hazardous waste for lead (D008), cadmium (D006), selenium (D010) and corrosivity (D002).

On July 30, 2021, NC DEQ Hazardous Waste Section and Division of Water Resources conducted a site visit and conducted water quality monitoring of a spring on a neighboring property that discharges to an unnamed tributary (Ravine 4) to the Broad River. The pH of the spring was 4.5. The spring is approximately 200 feet from the west side ponds.

On August 18, 2021, AZP collected surface water and sediment samples from “Ravine 4”, an unnamed tributary to the Broad River and the receiving surface water conveyance from a discharge from the off-

site spring. The results of the surface water and sediment samples were provided to the EPA Region 4, Technical Support Services (TSS) to be evaluated by an ecological toxicologist. The ecological toxicologist concluded that the surface water sample results for pH, cadmium, and zinc, "could be causing substantial harm to the aquatic life," in Ravine 4, the unnamed tributary to the Broad River (see TSS Memo).

3. Release or Threat of Release of Hazardous Substances, Pollutants or Contaminants
Sulfuric Acid, zinc, cadmium, and lead are all hazardous substances, listed in the Title 40 of the Code of Federal Regulations Section 302.4, as referred to in Section 101 (14) of CERCLA, as amended.

4. Threats to Public Health and the Environment
The continuous release off-site to Ravine 4 presents a threat to public health and the environment. The threat comes primarily from ecological (aquatic life) exposure to these hazardous substances.

[300.415(b)(2)(i)] Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants.

The discovery of a release of hazardous substances (sulfuric acid containing zinc, cadmium, lead, and selenium) on July 29, 2021, required notification to the National Response Center. Subsequently, a more thorough investigation has occurred that has demonstrated that an on-going release is occurring off-site from an impacted spring into Ravine 4, an unnamed tributary to the Broad River. The Broad River is a fishery used for sustenance as well as recreational (swimming, boating, etc.). It has been determined that these contaminants at the documented concentrations, "could be causing substantial harm to aquatic life," in Ravine 4.

[300.415(b)(2)(iii)] Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that pose a threat of release.

Three industrial process ponds containing hazardous substances have been determined to have been compromised from faulty liner systems. It is unknown when the releases occurred, it is unknown for how long the releases occurred, it is unknown how much quantity of the hazardous substances has released.

[300.315(b)(2)(v)] Weather conditions that may cause hazardous substances or pollutants to migrate or to be released.

Weather events may cause hazardous substances to be released or migrate off site.

The availability of other appropriate federal or state response mechanisms to respond to the release [300.415(b)(2)(vii)]

5. Determination
The RSE has identified hazardous substances at the Site which pose a threat of release. Based on the criteria listed above, the OSC recommends that the Site be considered for a time-critical removal action to remove and/or prevent migration of hazardous substances, pollutants, and contaminants.

CONCUR: James W. Webster

Digitally signed by James W. Webster
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DATE: October 22, 2021

James W. Webster, Ph.D., Chief, ERRPPB

NON-CONCUR: _____ DATE: _____

James W. Webster, Ph.D., Chief, ERRPPB